Data Evaluation Report on the Acute Toxicity of Transfluthrin to Algae, *Scenedesmus subspicatus*

PMRA Submission Number {.....} EPA MRID Number 50119711

Data Requirement:	PMRA DATA CODE	{.....}
	EPA DP Barcode	436376
	OECD Data Point	{.....}
	EPA MRID	50119711
	EPA Guideline	850.4500

Test material: Transfluthrin (NAK 4455) **Purity:** 95.7%

Common name:

Chemical name: IUPAC: (-) R trans 2,2-Dimethyl-3-(2,2-dichlorovinyl)-cyclo-propancarbonsäure-2,3,5,6-tetraflourobenzyl-ester

CAS name: Cyclopropanecarboxylic acid, 3-(2,2-dichlorothenyl)-2,2-dimethyl-1-, (2,3,5,6-tetrafluorophenyl)methyl ester, (1R-trans)-

CAS No.: 118712-89-3

Synonyms: Bayothrin, NAK 4455

Primary Reviewer: Dana Worcester
Environmental Scientist, CDM/CSS-Dynamac JV
Signature: Dana Worcester
Date: 4/11/2017

Secondary Reviewer: Kindra Bozicevich
Environmental Scientist, CDM/CSS-Dynamac JV
Signature: Kindra Bozicevich
Date: 7/12/2017

Primary Reviewer: Frank T. Farruggia, Ph.D.
Senior Scientist, EPA/OCSPP/OPP/EFED/ERB1
Date: 09-11-2017 2017.09.11 16:39:05 -04'00'

Secondary Reviewer(s): {.....}
{EPA/OECD/PMRA}
Date: {.....}

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EPA PC Code	129140	

Date Evaluation Completed: 11-09-2017

CITATION: Bruns, E. 2014. NAK 4455 (Bayothrin) Alga, Growth Inhibition Test. Study performed and sponsored by Bayer AG, Leverkusen, Germany. Study initiated June 5 and completed June 8, 2001.

This Data Evaluation Record may have been altered by the Environmental Fate and Effects Division subsequent to signing by CDM/CSS-Dynamac JV personnel

EXECUTIVE SUMMARY:

In a 72-hour acute toxicity study, cultures of freshwater alga, *Scenedesmus subcpicatus* CHODAT (strain not reported), were exposed to **Transfluthrin** (NAK 4455) at nominal concentrations of 0 (negative control), 0.003, 0.006, 0.013, 0.025, 0.05, and 0.1 mg/L under static conditions. Mean measured concentrations were <0.001 (<LOQ, negative control), 0.001, 0.002, 0.004, 0.008, 0.017, and 0.044 mg ai/L. The test substance was unstable under test conditions with 72-hour measured recoveries ranging from 7 to 25% of 0-hour concentrations, so the reviewer based toxicity values on initial measured concentrations which were <0.001 (<LOQ, negative control), 0.002, 0.003, 0.007, 0.015, 0.031, and 0.08 mg ai/L.

The most sensitive endpoint was yield with NOAEC and IC_{50} values of 0.031 and 0.083 mg ai/L, respectively. The IC_{50} should be interpreted with caution, because it was extrapolated beyond the test concentrations used in this experiment. NOAEC and IC_{50} values for area under the curve and growth rate were 0.031 and >0.08 mg ai/L, respectively. The % growth inhibition of cell density in the treated algal culture as compared to the negative control ranged from -7.3 to 34.0%.

No morphological abnormalities were noted. There were increases in pH during the test. There were no compound-related phytotoxic effects.

This study is **scientifically sound** and is classified as **supplemental(quantitative), see deviations.**

Results Synopsis

Test Organism: Freshwater algae, *Scenedesmus subcpicatus* CHODAT (strain not reported)
Test Type (Flow-through, Static, Static Renewal): Static

Yield
IC_{05}: 0.069 mg ai/L 95% C.I.: 0.065 to 0.072 mg ai/L
IC_{50}: 0.083 mg ai/L* 95% C.I.: 0.083 to 0.084 mg ai/L
NOAEC: 0.031 mg ai/L
Probit Slope: N/A
*IC_{50} should be interpreted with caution, it was extrapolated beyond the test concentrations

Growth rate
IC_{05}: Not calculable 95% C.I.: N/A
IC_{50}: >0.08 mg ai/L 95% C.I.: N/A
NOAEC: 0.031 mg ai/L
Probit Slope: N/A

Area under the curve
IC_{05}: Not calculable 95% C.I.: N/A
IC_{50}: >0.08 mg ai/L 95% C.I.: N/A
NOAEC: 0.031 mg ai/L
Probit Slope: N/A

Endpoint(s) Affected: Yield, growth rate, and area under the curve
Most Sensitive Endpoint: Yield

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED: The study was performed according to the procedures of the Council Directive 92/69/EEC (O.J. No. L383A, 29.12.92) Part C, Method 3. The following deficiency and deviations from the U.S. EPA OCSPP 850.4500 (2012) guideline are noted:

1. The test substance was unstable under test conditions, with 72-hour measured concentrations ranging from 7 to 25% of their initial measured counterparts. According to the current OCSPP/EFED policy with regards to measured concentrations for algae studies, if the chemical is *stable* throughout the test period, then mean measured concentrations are used for evaluation of endpoints. If the chemical *degrades rapidly* then the initial (Day 0) test concentrations are used for evaluation of endpoints. The use of the initial or Day 0 test concentrations are more appropriate for current EFED models. This is the guidance set forth in the EPA Rejection Rate Analysis Ecological Effects handbook (EPA 738-R-94-035, 1994).
2. The duration of the definitive test (72-hours) was shorter than recommended (96-120 hours).
3. The study author did not report the source of the dilution water, and did not provide information on water quality as recommended by OCSPP guidance.
4. Only 3 replicates were established for the exposure groups. OCSPP guidance recommends a minimum of 4 replicates in order to provide acceptable confidence in the results.
5. Random assignment of treatments to test vessels and test vessels to growth chamber positions was not reported. OCSPP and OECD guidance recommend random assignment, and OCSPP guidance states that the absence of random assignment can render a study invalid.
6. The study author reported the lighting exposure conditions as 60-120 μ^{-2} x s^{-1} (400-700 nm), equivalent to 6,000-10,000 lux is recommended. The actual conditions were not reported. OCSPP guidance recommends 4,000-5,000 (±15%) lux.
7. The quality of the light source was not reported.

These deviations do impact the acceptability of the study.

COMPLIANCE: Signed and dated GLP, Quality Assurance and No Data Confidentiality statements were provided. The study was performed in accordance with the GLP standards of Annex I of Law on Hazardous Substances (German Chemicals Law).

A. MATERIALS:

1. Test material **NAK 4455 (Transfluthrin) Technical**

Description: Not reported

Lot No./Batch No. : 816779502

Purity: 95.7%

Stability of compound under test conditions: The test material was not stable. The 72-hour measured concentrations ranged from 7 to 25% of their initial measured counterparts. *(OECD recommends stability in water and light)*

Storage conditions of

test chemicals: Not reported.

Physicochemical properties of Transfluthrin.

Parameter	Values	Comments
Water solubility	5.7 x $^{10-5}$ g/L	
Vapor pressure at 20°C	4.0 x 10^{-6} hPa	
UV absorption	Not reported	
pKa	Not reported	
Kow	Not reported	

2. Test organism:

Name: Freshwater algae, *Scenedesmus subcpicatus* CHODAT

This test is conducted with a nonvascular species, including at a minimum the freshwater alga P. subcapitata (formerly S. capricornutum), freshwater diatom N. pelliculosa, and the marine diatom S. costatum. Other test species may need modification of the test method. For Tier I studies, only the freshwater alga P. subcapitata is recommended. The cyanobacterium A. flos-aquae test is found in EPA guideline 850.4550.

OECD suggests the following species are considered suitable: S. capricornutum, S. subspicatus, and C. vulgaris. If other species are used, the strain should be reported.

Strain: Not reported

Source: Cultures obtained from the Collection of Algal Cultures of the Institute of Plant Physiology at the University of Göttingen, Germany.
EPA recommends algae be from the same source and stock culture or commercial sources.

Age of inoculum: 3 days
EPA recommends the algal inoculum should be from logarithmically growing stock cultures (typically 3- to 7-days old).

Method of cultivation: Cultured in Bringmann and Kühn media under continuous fluorescent light at 60-120 μ^{-2} x s^{-1} (400-700 nm) at 23 ± 2°C.

B. STUDY DESIGN:

1. Experimental Conditions

a. Range-finding study: Test concentrations were based on a range finding test. The maximum concentration was limited by the water solubility of the test substance.

b. b. Definitive Study

Table 1: Experimental Parameters

Parameter	Details	Remarks *Criteria*
Acclimation period: Culturing media and conditions: (same as test or not) Health: (any mortality observed)	Precultures were inoculated, and 3 days later the algae were used for the test. Same as test Exponentially growing	*EPA recommends the algal inoculum used to initiate toxicity testing is from a liquid culture shown to be actively growing (i.e. capable of logarithmic growth within the test period) in at least two subcultures lasting 7 days each prior to the start of the definitive test. A culture should not be used if it is contaminated by fungi/other algae or if test algae were used in a previous test.* *OECD recommends an amount of algae suitable for the inoculation of test cultures and incubated under the conditions of the test and used when still exponentially growing, normally after an incubation period of about 3 days. When the algal cultures contain deformed or abnormal cells, they must be discarded.*
Test system Static/static renewal Renewal rate for static renewal	Static N/A	*EPA recommends a static exposure technique. Although semi-continuous algal culturing techniques are available, they have not been commonly employed in algal toxicity testing and their use is not recommended.*
Incubation facility	Temperature-controlled environmental chamber	
Duration of the test	72 hours	*EPA recommends 96 hours at a minimum.* *OECD: 72 hours.*

Parameter	Details	Remarks *Criteria*
Test vessel Material: *(glass/stainless steel)* Size: Fill volume:	 Not reported 300 mL Not reported	Erlenmeyer flasks with stoppers *EPA recommends 125-500 mL Erlenmeyer flasks and test solution volume ≤50% of flask volume. Flasks may be covered with foam plugs (that are proven non-toxic), stainless steel caps, Shimadzu enclosures, glass caps or screw caps.* *EPA recommends all test vessels and closures to be identical.* *OECD recommends 250 ml conical flasks are suitable when the volume of the test solution is 100 ml or use a culturing apparatus.*
Details of growth medium pH at test initiation: pH at test termination: Chelator used: Carbon source: Salinity (**for marine algae**):	 7.7 to 8.3 9.4 to 10.4 $Na_2EDTA{\cdot}2H_2O$ $NaHCO_3$ N/A	 *EPA recommends an AAP medium with chelating agents (e.g. EDTA) prepared according to EPA's 850.4500 guideline (http://www2.epa.gov/test-guidelines-pesticides-and-toxic-substances/series-850-ecological-effects-test-guidelines). Lower concentrations of chelating agents (down to one-third of the normal concentration recommended for AAP medium) may be used in the nutrient medium for test solution preparation if it is suspected that the chelator will interact with the test material.* *EPA recommends adjustment of pH before adding inoculum, if pH of test solution is <5 or highly basic.* *OECD recommends the medium pH after equilibration with air is ~8 with less than 0.001 mmol/L of chelator if used.*
If non-standard nutrient medium was used, detailed composition provided (Yes/No)	Yes	

Parameter	Details	Remarks
		Criteria
Dilution water used to prepare media Source of dilution water: Quality of dilution water Hardness: Alkalinity: pH: Specific conductivity: Salinity (**for marine algae**): Water pretreatment (if any): TOC: COD: Particulate matter: Metals: Pesticides/PCBs: Chlorine:	 Not reported Not reported Not reported Not reported Not reported N/A Not reported Not reported Not reported Not reported Not reported Not reported Not reported	*Water used for preparation of nutrient medium should be of reagent quality (e.g., ASTM Type I water).* *Marine algal nutrient medium is prepared by adding reagent grade chemicals to synthetic salt water or filtered natural salt water, or by preparing a complete saltwater medium. Salinity for saltwater medium should be 30 ± 5 ‰.*
Indicate how the test material is added to the medium (added directly or used stock solution)	0.9 mg of the test substance was added to 2L of dilution water. It was treated with an ultra turrax and then stirred for 24 hours. Undissolved particles were filtered out.	
Aeration or agitation Oscillation rate	None reported	*EPA recommends rotary shaking apparatus to oscillate vessels at approximately 100 cycles/min during the test. The rate of oscillation should be determined at test initiation or at least once daily during testing if the shaking rate changes. S. costatum should be shaken by hand 1-2X daily or shaken at 60 cycles/min.*
Initial cells density	$1.0x10^4$ cells/mL	

Parameter	Details	Remarks
		Criteria
		EPA recommends an initial population density of 10,000 cells/mL for P. subcapitata, S. costatum and at a minimum 10,000 cells/mL for all other test species. Other species may need a higher initial inoculum density and should be determined on a case-by case basis. *OECD recommends that the initial cell concentration be approximately 10,000 cells/ml for S. capricornutum and S. subspicatus. When other species are used the biomass should be comparable.*
Number of replicates Control: Solvent control: Treatments:	 6 N/A 3	
		EPA recommends a minimum number of 4 replicates per treatment and control/ solvent control. *OECD preferably three replicates at each test concentration and ideally twice that number of controls. When a vehicle is used to solubilize the test substance, additional controls containing the vehicle at the highest concentration used in the test.* *EPA recommends treatments be randomly assigned to test vessels, and test vessels randomly assigned to positions in the growth chamber.*
Test concentrations		

Parameter	Details	Remarks
		Criteria
Nominal: Mean measured: Initial measured:	0 (negative control), 0.003, 0.006, 0.013, 0.025, 0.05 and 0.1 mg/L <0.001 (<LOQ, negative control), 0.001, 0.002, 0.004, 0.008, 0.017, and 0.044 mg ai/L <0.001 (<LOQ, negative control), 0.002, 0.003, 0.007, 0.015, 0.031, and 0.08 mg ai/L	*EPA recommends at least 5 test concentrations, in geometric series with a ratio of 2 to 4, and insure bracketing the NOAEC or IC_{05} and the IC_{50}, plus a control/solvent control.* *OECD recommends at least five concentrations arranged in a geometric series, with the lowest concentration tested should have no observed effect on the growth of the algae. The highest concentration tested should inhibit growth by at least 50% relatively to the control and, preferably, stop growth completely.*
Solvent (type, percentage, if used)	N/A	*EPA recommends the solvent N,N-dimethyl-formamide. The concentration of solvent should be the same in all test treatments and should not exceed 0.1 mL/L.*
Method and interval of analytical verification	Test concentrations were measured at 0 and 72 hours using GC analysis.	*EPA recommends confirmation of dissolved test concentrations at a minimum at test initiation and at test termination for static tests.*

Parameter	Details	Remarks *Criteria*
Test conditions Temperature: Photoperiod: Light intensity and quality:	23 ± 2°C Continuous 60-120 μ^{-2} x s^{-1} (400-700 nm), equivalent to 6,000-10,000 lux, quality not reported	*EPA Recommendations* *pH at test initiation: 7.5±0.1 for freshwater and 8.0±0.1 for marine. Temperature for P. subcapita and N. pelliculosa is 24±2 °C, and for S. costatum is 20±2 °C* *Photoperiod for P. subcapita and N. pelliculosa is continuous, and for S. costatum is 14 hr light/ 10 hr dark.* *Light intensity: 60 µmol/m2/s or 4300 lux.* *OECD recommended the temperature in the range of 21 to 25°C maintained at ± 2°C and continuous uniform illumination provided at approximately 8000 Lux measured with a spherical collector.* *OECD: pH is measured at beginning of the test and at 72 hours, it should not normally deviate by more than one unit during the test.* *EPA recommends measuring pH at test initiation and at end of the test (or daily if pH adjustment was necessary); temperature on a separate vessel or hourly/daily on the air; and light intensity at test initiation (or daily if intensity changed by >15%);*
Reference chemical (if used) name: concentrations:	N/A	
Other parameters, if any	N/A	

2. Observations:

Table 2: Observation parameters

Parameters	Details	Remarks Criteria
Parameters measured including the growth inhibition/other toxicity symptoms	Cell density Yield Growth rate Area under the curve (AUC)	*Recommended parameters measured per replicate include:* *-Algal cell density (cell count/mL)* *-yield (final population density)* *-average specific growth rate* *-mean area under growth curve (AUC)*
Measurement technique for cell density and other end points	Cell density was determined using a microcell counter. Yield was calculated as cell density at test termination minus test initiation. Growth rate was calculated from cell density using a logarithmic growth equation. Area under the curve was determined by the ratio of cell density at test termination to test initiation.	*EPA recommends the measurement of cell counts by microscopic observation or electronic particle counter, with alternative option of measuring chlorophyll a.* *OECD recommends the electronic particle counter, microscope with counting chamber, fluorimeter, spectrophotometer, and colorimeter. (note: in order to provide useful measurements at low cell concentrations when using a spectrophotometer, it may be necessary to use cuvettes with a light path of at least 4 cm).*
Observation intervals	Every 24 hours	*EPA and OECD: every 24 hours.*
Other observations, if any	Cells were observed daily for health.	
Indicate whether there was an exponential growth in the control	Yes, after 72 hours, the mean cell density of the negative control increased 34-fold.	*During the 96 hour test period, cell counts in the controls did not increase by a factor of at least 100X for P. subcapitata and a factor of at least 30X for S. costatum (i.e., logarithmic growth in the controls was not reached during the test).* *OECD: cell concentration in control cultures should have increased by a factor of at least 16 within three days.*
Were raw data included?	Yes, raw cell density data were provided.	

II. RESULTS and DISCUSSION:

A. INHIBITORY EFFECTS:

After 72 hours, the mean cell density of the negative control was 33.667×10^4 cells/mL, yielding inhibitions

relative to the negative control of -4.0, -2.0, -2.3, -4.0, -7.3, and 34% for the initial measured exposure concentrations of 0.002, 0.003, 0.007, 0.015, 0.031, and 0.080 mg ai/L, respectively. The study author did not assess cell density.

The mean 0-72 hour yield of the negative control was 32.6667×10^4 cells/mL, yielding inhibitions relative to the negative control of -4.1, -2.0, -2.4, -4.1, -7.5, and 35% for the initial measured exposure concentrations of 0.002, 0.003, 0.007, 0.015, 0.031, and 0.080 mg ai/L, respectively. The study author did not assess yield.

The mean 0-72 hour growth rate of the negative control was 1.17/day, yielding inhibitions relative to the negative control of -1.1, -0.6, -0.7, -1.1, -2.0, and 12% for the initial measured exposure concentrations of 0.002, 0.003, 0.007, 0.015, 0.031, and 0.080 mg ai/L, respectively. The NOAEC and IC_{50} values reported by the study author based on growth rate were 0.017 and >0.044 mg ai/L, respectively, in terms of mean measured exposure concentrations.

The mean 0-72 hour AUC value of the negative control was 41.2222×10^4 cells/mL, yielding inhibitions relative to the negative control of -0.5, 1.1, -1.2, -1.1, -4.6, and 34% for the initial measured exposure concentrations of 0.002, 0.003, 0.007, 0.015, 0.031, and 0.080 mg ai/L, respectively. The NOAEC and IC_{50} values reported by the study author based on yield were 0.017 and >0.044 mg ai/L, respectively, in terms of mean measured exposure concentrations.

No morphological abnormalities were noted. There were increases in pH during the test. There were no compound-related phytotoxic effects.

Table 3: Effect of Transfluthrin on algal growth (*Scenedesmus subspicatus*).

Treatment Initial measured, (mean measured), and [nominal] concentrations mg ai/L	Initial cell density (x10^4 cells/mL)	Cell density (x10^4 cells/mL) at			
		24 hours	48 hours	72 hours	
				cell count	% inhibition [a]
Negative control	1.0	5.8333	21.0556	33.6667	N/A
0.002 (0.001) [0.003]	1.0	6.3333	20.1111	35.0000	-4.0
0.003 (0.002) [0.006]	1.0	5.6667	20.4445	34.3333	-2.0
0.007 (0.004) [0.013]	1.0	6.0000	21.0000	34.4444	-2.3
0.015 (0.008) [0.025]	1.0	6.1111	20.5556	35.0000	-4.0
0.031 (0.017) [0.05]	1.0	6.5556	21.0000	36.1111	-7.3
0.080 (0.044) [0.1]	1.0	4.7778	13.6667	22.2222	34
Reference chemical (if used)	N/A				

[a] Calculated by the reviewer relative to the negative control.

Table 4: Effect of Transfluthrin on algal growth (*Scenedesmus subspicatus*).

Treatment Initial measured, (mean measured), and [nominal] concentrations mg ai/L	Initial cell density ($x10^4$ cells/mL)	Mean growth rate (day^{-1})		Mean area under the curve (AUC)		Mean yield (based on cell density; $x10^4$ cells/mL) [a]	
		0-72 hours	% inhibition	0-72 hours	% inhibition	0-72 hours	% inhibition [b]
Negative control	1.0	1.17	N/A	41.2222	N/A	32.6667	N/A
0.002 (0.001) [0.003]	1.0	1.19	-1.1	41.4444	-0.5	34.0000	-4.1
0.003 (0.002) [0.006]	1.0	1.18	-0.6	40.7778	1.1	33.3333	-2.0
0.007 (0.004) [0.013]	1.0	1.18	-0.7	41.7222	-1.2	33.4444	-2.4
0.015 (0.008) [0.025]	1.0	1.19	-1.1	41.6667	-1.1	34.0000	-4.1
0.031 (0.017) [0.05]	1.0	1.20	-2.0	43.1111	-4.6	35.1111	-7.5
0.080 (0.044) [0.1]	1.0	1.03	11.8	27.0556	34.4	21.2222	35.0

[a] Calculated by the reviewer as final minus initial cell density.
[b] Calculated by the reviewer relative to the negative control.

Table 5: Statistical endpoint values.* (calculated by the study author based on mean measured concentrations)

Statistical endpoint	Cell density	Yield	Growth rate	Area under the curve (AUC)
NOAEC (mg ai/L)	Not calculated	Not calculated	0.017	0.017
LOAEC (mg ai/L)	Not calculated	Not calculated	0.044	0.044
IC_{50} or EC_{50} (mg ai/L) (95% C.I.)	Not calculated	Not calculated	>0.044 (N/A)	>0.044 (N/A)
Reference chemical, if used	N/A			

* Do not use this table, if the study was deemed unacceptable.
NA = Not applicable.

B. REPORTED STATISTICS:

The endpoints evaluated and statistically analyzed by the study author were area under the growth curve and growth rate. LOAEC and NOAEC values were calculated by Dunnett's test. All analyses were based on mean measured concentrations.

C. VERIFICATION OF STATISTICAL RESULTS:

Statistical Method: The reviewer statistically analyzed the 72-hour endpoints for yield, growth rate, and AUC using CETIS version 1.8.7.12 statistical software using backend database settings implemented by EFED on 10/20/15.

The data were assessed for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's tests, respectively. All data met both assumptions and were therefore analyzed using ANOVA followed by Dunnett's test. The ICx values and 95% C.I. were calculated using nonlinear regression. Toxicity values are reported in terms of initial measured exposure concentrations.

Yield
IC_{05}: 0.069 mg ai/L 95% C.I.: 0.065 to 0.072 mg ai/L
IC_{50}: 0.083 mg ai/L* 95% C.I.: 0.083 to 0.084 mg ai/L
NOAEC: 0.031 mg ai/L
Probit Slope: N/A
*IC_{50} should be interpreted with caution, it was extrapolated beyond the test concentrations

Growth rate
IC_{05}: Not calculable 95% C.I.: N/A
IC_{50}: >0.08 mg ai/L 95% C.I.: N/A
NOAEC: 0.031 mg ai/L
Probit Slope: N/A

Area under the curve
IC_{05}: Not calculable 95% C.I.: N/A
IC_{50}: >0.08 mg ai/L 95% C.I.: N/A
NOAEC: 0.031 mg ai/L
Probit Slope: N/A

D. STUDY DEFICIENCIES:

The test substance was unstable under test conditions, with 72-hour measured concentrations ranging from 7 to 25% of their initial measured counterparts. According to the current OCSPP/EFED policy with regards to measured concentrations for algae studies, if the chemical is *stable* throughout the test period, then mean measured concentrations are used for evaluation of endpoints. If the chemical *degrades rapidly* then the initial (Day 0) test concentrations are used for evaluation of endpoints. The use of the initial or Day 0 test concentrations are more appropriate for current EFED models. This is the guidance set forth in the EPA Rejection Rate Analysis Ecological Effects handbook (EPA 738-R-94-035, 1994).

E. REVIEWER'S COMMENTS:

The reviewer's values were in agreement with those of the study author for growth rate and area under the curve. The study author did not analyze yield. The reviewer's results are reported in the Executive Summary and Conclusions sections of this report.

The in-life phase of the definitive test was conducted from June 5 to June 8, 2001.

The coefficient of variation (CV) of control yield was 4.83%, which meets the guideline requirement of yield CV<15%. The CV of control growth rate was 1.35%, which meets the guideline requirement of growth rate CV<15%.

F. CONCLUSIONS:

This study **is scientifically sound** and is classified as **supplemental (quantitative)**. After 72 hours, the most sensitive endpoint was yield with NOAEC and IC_{50} values of 0.031 and 0.083 mg ai/L, respectively, based on initial measured concentrations. The IC_{50} should be interpreted with caution, because it was extrapolated beyond the test concentrations used in this experiment.

III. REFERENCES: None reported.

OCSPP 850.4500 Algal Toxicity — **Bayer AG**

Analysis ID:	19-7144-7103	**Endpoint:**	72h AUC	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	10-7105-5740	**Test Type:**	Algal Cell Growth (96-h)	**Analyst:**	
Start Date:	05 Jun-01	**Protocol:**	OCSPP 850.4500 Aquatic Plant (Algae)	**Diluent:**	Bringmann Kuhn
Ending Date:		**Species:**	Scenedesmus subspicatus (Green Alga)	**Brine:**	
Duration:	NA	**Source:**	Institute Plant Physiology	**Age:**	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	5.67%	0.031	0.08	0.0498	

Dunnett Multiple Comparison Test

Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		0.002	-0.242	2.55	56	7	0.9513	CDF	Non-Significant Effect
		0.003	0.483	2.55	56	7	0.7598	CDF	Non-Significant Effect
		0.007	-0.547	2.55	56	7	0.9798	CDF	Non-Significant Effect
		0.015	-0.487	2.55	56	7	0.9757	CDF	Non-Significant Effect
		0.031	-2.07	2.55	56	7	0.9999	CDF	Non-Significant Effect
		0.08*	15.5	2.55	56	7	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	325364.7	54227.45	6	56.3	<0.0001	Significant Effect
Error	16373.84	963.1669	17			
Total	341738.6		23			

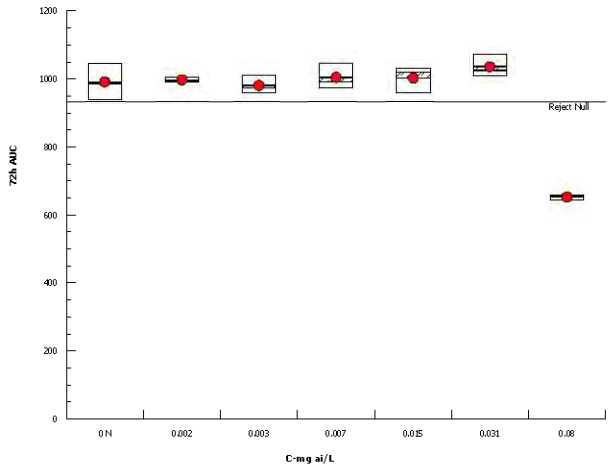
Distributional Tests

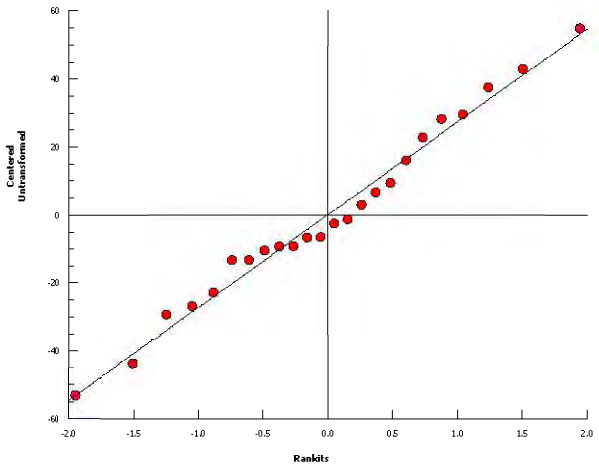
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	6.49	16.8	0.3708	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.982	0.884	0.9358	Normal Distribution

72h AUC Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	6	989	951	1030	984	936	1040	14.8	3.68%	0.0%
0.002		3	995	974	1020	992	988	1000	4.79	0.83%	-0.54%
0.003		3	979	912	1050	972	956	1010	15.4	2.73%	1.07%
0.007		3	1000	907	1100	988	972	1040	21.8	3.78%	-1.21%
0.015		3	1000	904	1100	1020	956	1030	22.3	3.86%	-1.08%
0.031		3	1030	952	1120	1020	1010	1070	19.3	3.22%	-4.59%
0.08		3	649	629	670	652	640	656	4.79	1.28%	34.4%

Graphics





OCSPP 850.4500 Algal Toxicity — **Bayer AG**

Analysis ID:	12-1275-1602	**Endpoint:**	72h Cell Density	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	10-7105-5740	**Test Type:**	Algal Cell Growth (96-h)	**Analyst:**	
Start Date:	05 Jun-01	**Protocol:**	OCSPP 850.4500 Aquatic Plant (Algae)	**Diluent:**	Bringmann Kuhn
Ending Date:		**Species:**	Scenedesmus subspicatus (Green Alga)	**Brine:**	
Duration:	NA	**Source:**	Institute Plant Physiology	**Age:**	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	6.39%	0.031	0.08	0.0498	

Dunnett Multiple Comparison Test

Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		0.002	-1.63	2.55	2.09	7	0.9995	CDF	Non-Significant Effect
		0.003	-0.816	2.55	2.09	7	0.9914	CDF	Non-Significant Effect
		0.007	-0.95	2.55	2.09	7	0.9946	CDF	Non-Significant Effect
		0.015	-1.63	2.55	2.09	7	0.9995	CDF	Non-Significant Effect
		0.031	-2.99	2.55	2.09	7	1.0000	CDF	Non-Significant Effect
		0.08*	14	2.55	2.09	7	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	415.663	69.27716	6	51.9	<0.0001	Significant Effect
Error	22.7046	1.335565	17			
Total	438.3676		23			

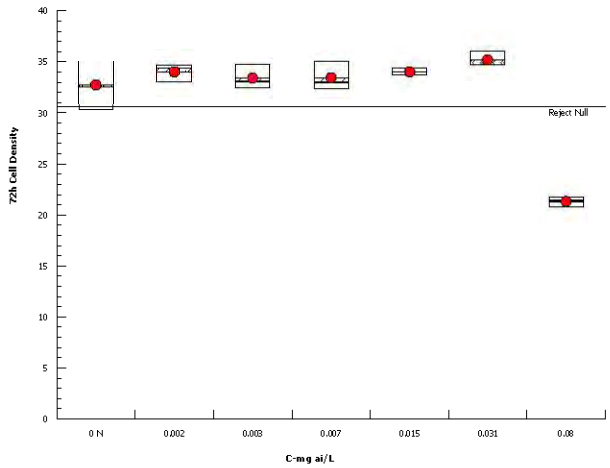
Distributional Tests

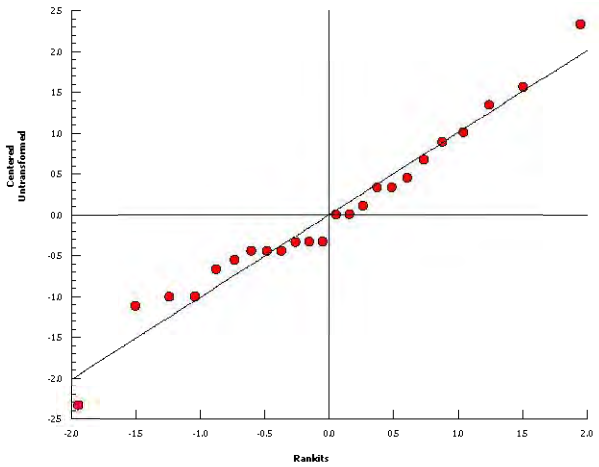
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	5.95	16.8	0.4291	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.974	0.884	0.7632	Normal Distribution

72h Cell Density Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	6	32.7	31	34.3	32.5	30.3	35	0.645	4.83%	0.0%
0.002		3	34	31.8	36.2	34.3	33	34.7	0.51	2.6%	-4.08%
0.003		3	33.3	30.3	36.3	33	32.3	34.7	0.696	3.62%	-2.04%
0.007		3	33.4	30	36.9	33	32.3	35	0.802	4.15%	-2.38%
0.015		3	34	33.2	34.8	34	33.7	34.3	0.191	0.97%	-4.08%
0.031		3	35.1	33.2	37	34.7	34.7	36	0.443	2.19%	-7.49%
0.08		3	21.2	20	22.5	21.3	20.7	21.7	0.294	2.4%	35.0%

Graphics





OCSPP 850.4500 Algal Toxicity — **Bayer AG**

Analysis ID:	14-4516-7464	**Endpoint:**	72h Growth Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	10-7105-5740	**Test Type:**	Algal Cell Growth (96-h)	**Analyst:**	
Start Date:	05 Jun-01	**Protocol:**	OCSPP 850.4500 Aquatic Plant (Algae)	**Diluent:**	Bringmann Kuhn
Ending Date:		**Species:**	Scenedesmus subspicatus (Green Alga)	**Brine:**	
Duration:	NA	**Source:**	Institute Plant Physiology	**Age:**	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	1.78%	0.031	0.08	0.0498	

Dunnett Multiple Comparison Test

Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		0.002	-1.55	2.55	0.021	7	0.9994	CDF	Non-Significant Effect
		0.003	-0.775	2.55	0.021	7	0.9902	CDF	Non-Significant Effect
		0.007	-0.938	2.55	0.021	7	0.9943	CDF	Non-Significant Effect
		0.015	-1.59	2.55	0.021	7	0.9995	CDF	Non-Significant Effect
		0.031	-2.85	2.55	0.021	7	1.0000	CDF	Non-Significant Effect
		0.08*	17	2.55	0.021	7	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.05845663	0.009742771	6	72.9	<0.0001	Significant Effect
Error	0.002271333	0.0001336078	17			
Total	0.06072796		23			

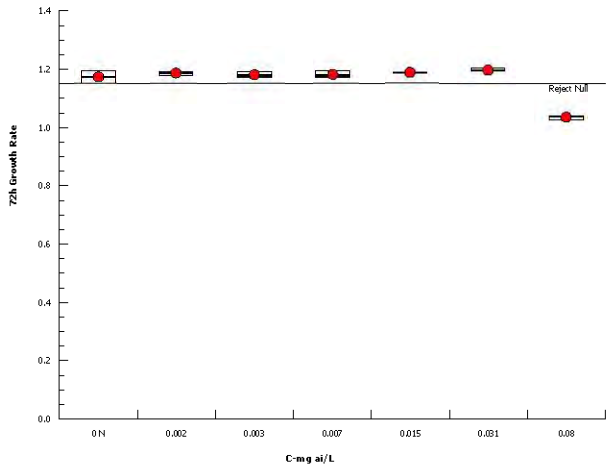
Distributional Tests

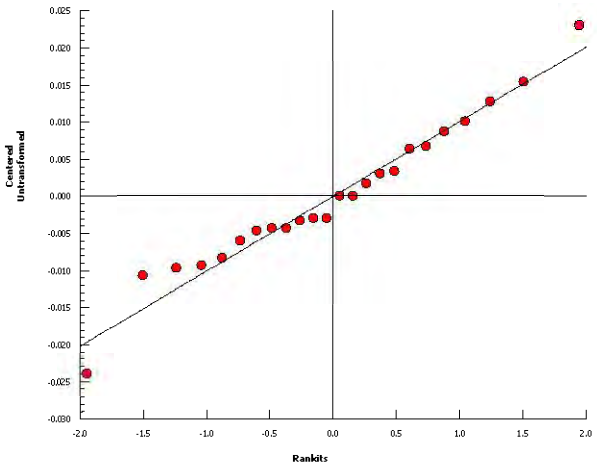
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	5.35	16.8	0.4996	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.976	0.884	0.8160	Normal Distribution

72h Growth Rate Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	6	1.17	1.16	1.19	1.17	1.15	1.2	0.00646	1.35%	0.0%
0.002		3	1.18	1.16	1.21	1.19	1.17	1.19	0.00491	0.72%	-1.08%
0.003		3	1.18	1.15	1.21	1.18	1.17	1.19	0.00657	0.97%	-0.54%
0.007		3	1.18	1.15	1.21	1.18	1.17	1.2	0.00786	1.15%	-0.65%
0.015		3	1.18	1.18	1.19	1.19	1.18	1.19	0.00173	0.25%	-1.11%
0.031		3	1.2	1.18	1.21	1.19	1.19	1.2	0.00433	0.63%	-1.99%
0.08		3	1.03	1.01	1.05	1.03	1.02	1.04	0.00441	0.74%	11.8%

Graphics





OCSPP 850.4500 Algal Toxicity — **Bayer AG**

Analysis ID:	19-1215-4747	**Endpoint:**	72h AUC	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Nonlinear Regression	**Official Results:**	Yes
Batch ID:	10-7105-5740	**Test Type:**	Algal Cell Growth (96-h)	**Analyst:**	
Start Date:	05 Jun-01	**Protocol:**	OCSPP 850.4500 Aquatic Plant (Algae)	**Diluent:**	Bringmann Kuhn
Ending Date:		**Species:**	Scenedesmus subspicatus (Green Alga)	**Brine:**	
Duration:	NA	**Source:**	Institute Plant Physiology	**Age:**	

Non-Linear Regression Options

Model Function	X Transform	Y Transform	Weighting Function	PTBS Function
3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]	None	None	Normal [W=1]	Off [Y*=Y]

Regression Summary

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision(α:5%)
100	-93.9	195	197	0.9293	Yes	1.48	2.96	0.2530	Non-Significant Lack of Fit

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
A	998	7.07	984	1010	141	<0.0001	Significant Parameter
C	0.135	0.00911	0.117	0.153	14.8	<0.0001	Significant Parameter
D	0.0843	0.000297	0.0837	0.0849	284	<0.0001	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	319675.3	319675.3	1	304	<0.0001	Significant
Lack of Fit	5689.438	1422.359	4	1.48	0.2530	Non-Significant
Pure Error	16373.84	963.1669	17			
Residual	22063.27	1050.632	21			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Variances	Bartlett Equality of Variance	6.49	12.6	0.3708	Equal Variances
	Mod Levene Equality of Variance	0.568	3.09	0.7479	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.984	0.917	0.9570	Normal Distribution
	Anderson-Darling A2 Normality	0.229	2.49	0.8398	Normal Distribution

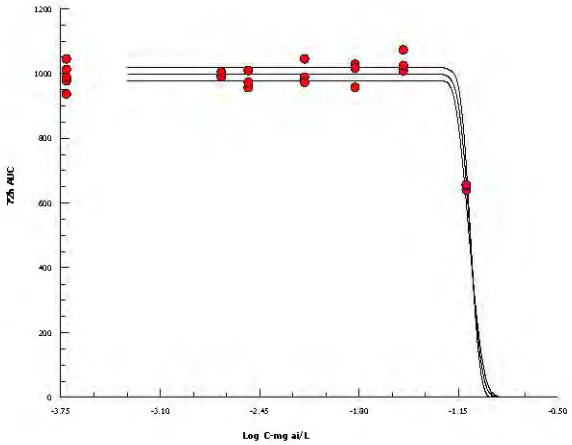
72h AUC Summary

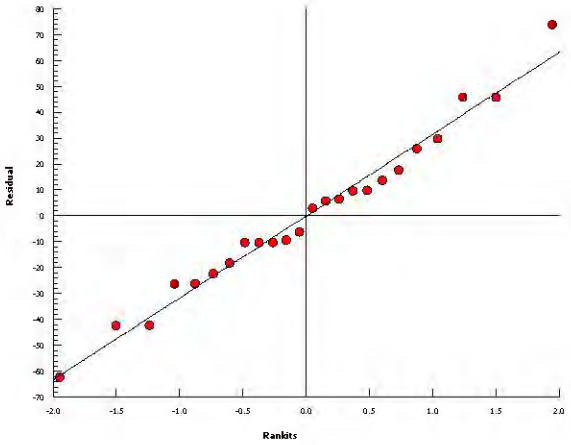
			Calculated Variate						
C-mg ai/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	6	989	936	1040	14.8	36.4	3.68%	0.0%
0.002		3	995	988	1000	4.79	8.29	0.83%	-0.54%
0.003		3	979	956	1010	15.4	26.7	2.73%	1.07%
0.007		3	1000	972	1040	21.8	37.8	3.78%	-1.21%
0.015		3	1000	956	1030	22.3	38.6	3.86%	-1.08%
0.031		3	1030	1010	1070	19.3	33.4	3.22%	-4.59%
0.08		3	649	640	656	4.79	8.3	1.28%	34.4%

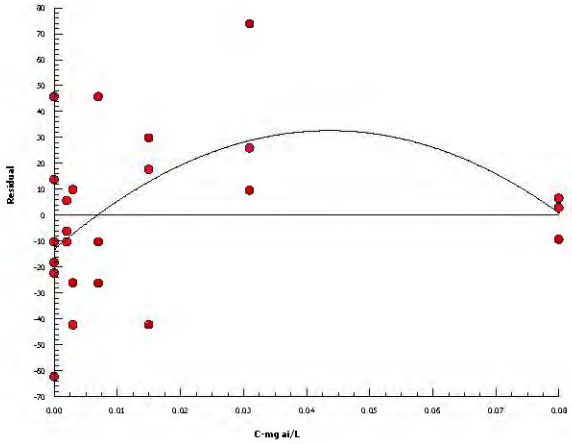
OCSPP 850.4500 Algal Toxicity **Bayer AG**

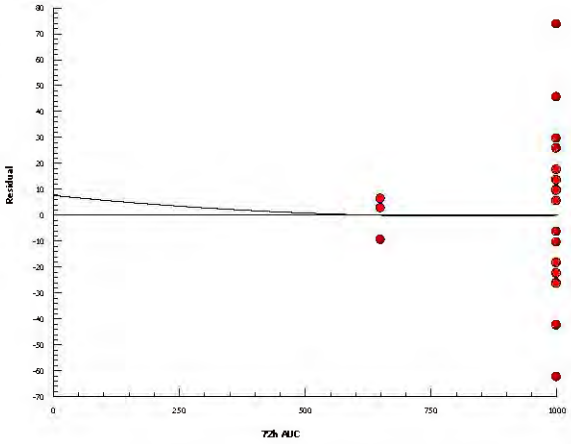
Analysis ID:	19-1215-4747	**Endpoint:**	72h AUC	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Nonlinear Regression	**Official Results:**	Yes

Graphics 3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]









OCSPP 850.4500 Algal Toxicity — **Bayer AG**

Analysis ID:	19-5014-6263	**Endpoint:**	72h Cell Density	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Nonlinear Regression	**Official Results:**	Yes
Batch ID:	10-7105-5740	**Test Type:**	Algal Cell Growth (96-h)	**Analyst:**	
Start Date:	05 Jun-01	**Protocol:**	OCSPP 850.4500 Aquatic Plant (Algae)	**Diluent:**	Bringmann Kuhn
Ending Date:		**Species:**	Scenedesmus subspicatus (Green Alga)	**Brine:**	
Duration:	NA	**Source:**	Institute Plant Physiology	**Age:**	

Non-Linear Regression Options

Model Function	X Transform	Y Transform	Weighting Function	PTBS Function
3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]	None	None	Normal [W=1]	Off [Y*=Y]

Regression Summary

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision(α:5%)
5	-16.9	41	43.3	0.9099	Yes	2.5	2.96	0.0815	Non-Significant Lack of Fit

Point Estimates

Level	mg ai/L	95% LCL	95% UCL
IC5	0.0693	0.0652	0.0715
IC20	0.0757	0.0738	0.0773
IC50	0.083	0.0825	0.0835

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
A	33.6	0.286	33	34.2	118	<0.0001	Significant Parameter
C	0.109	0.01	0.0899	0.129	10.9	<0.0001	Significant Parameter
D	0.083	0.000279	0.0825	0.0835	298	<0.0001	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	402.3191	402.3191	1	234	<0.0001	Significant
Lack of Fit	13.34393	3.335983	4	2.5	0.0815	Non-Significant
Pure Error	22.7046	1.335565	17			
Residual	36.04853	1.716597	21			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Variances	Bartlett Equality of Variance	5.95	12.6	0.4291	Equal Variances
	Mod Levene Equality of Variance	0.431	3.09	0.8433	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.963	0.917	0.4933	Normal Distribution
	Anderson-Darling A2 Normality	0.402	2.49	0.3634	Normal Distribution

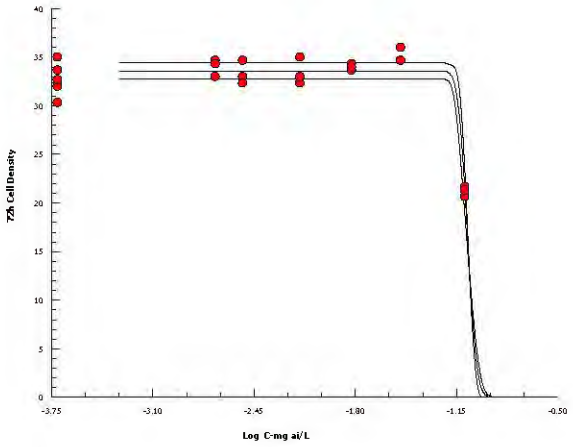
72h Cell Density Summary

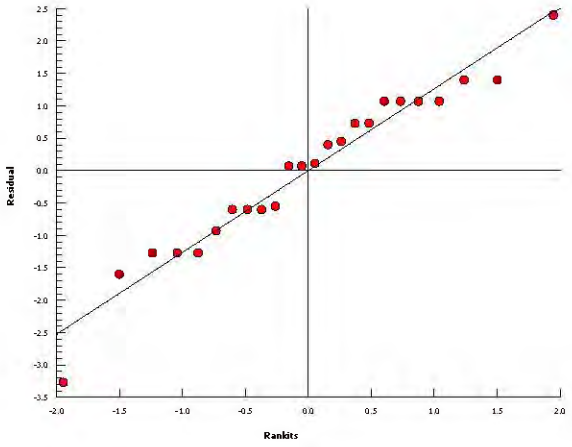
			Calculated Variate						
C-mg ai/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	6	32.7	30.3	35	0.645	1.58	4.83%	0.0%
0.002		3	34	33	34.7	0.51	0.883	2.6%	-4.08%
0.003		3	33.3	32.3	34.7	0.696	1.21	3.62%	-2.04%
0.007		3	33.4	32.3	35	0.802	1.39	4.15%	-2.38%
0.015		3	34	33.7	34.3	0.191	0.33	0.97%	-4.08%
0.031		3	35.1	34.7	36	0.443	0.768	2.19%	-7.49%
0.08		3	21.2	20.7	21.7	0.294	0.508	2.4%	35.0%

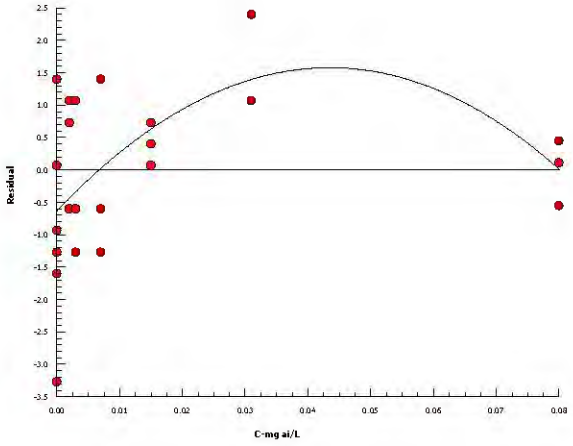
OCSPP 850.4500 Algal Toxicity **Bayer AG**

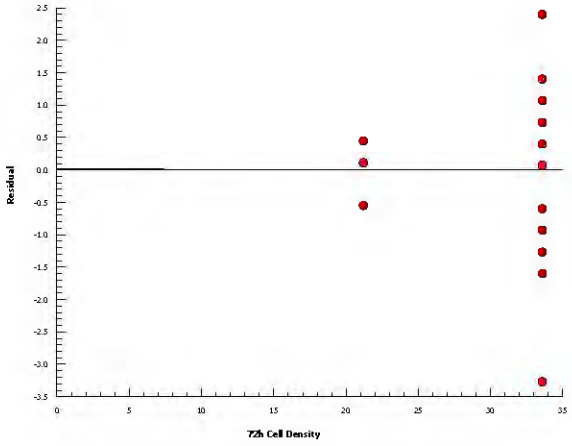
Analysis ID:	19-5014-6263	**Endpoint:**	72h Cell Density	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Nonlinear Regression	**Official Results:**	Yes

Graphics 3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]









OCSPP 850.4500 Algal Toxicity — **Bayer AG**

Analysis ID:	07-8318-4490	**Endpoint:**	72h Growth Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Nonlinear Regression	**Official Results:**	Yes
Batch ID:	10-7105-5740	**Test Type:**	Algal Cell Growth (96-h)	**Analyst:**	
Start Date:	05 Jun-01	**Protocol:**	OCSPP 850.4500 Aquatic Plant (Algae)	**Diluent:**	Bringmann Kuhn
Ending Date:		**Species:**	Scenedesmus subspicatus (Green Alga)	**Brine:**	
Duration:	NA	**Source:**	Institute Plant Physiology	**Age:**	

Non-Linear Regression Options

Model Function	X Transform	Y Transform	Weighting Function	PTBS Function
3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]	None	None	Normal [W=1]	Off [Y*=Y]

Regression Summary

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision(α:5%)
100	94	-181	-179	0.9371	Yes	2.28	2.96	0.1033	Non-Significant Lack of Fit

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
A	1.18	0.00281	1.18	1.19	420	<0.0001	Significant Parameter
C	0.186	0.0026	0.181	0.191	71.4	<0.0001	Significant Parameter
D	0.099	0.000296	0.0985	0.0996	334	<0.0001	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	0.057239	0.057239	1	345	<0.0001	Significant
Lack of Fit	0.001217	0.000304	4	2.28	0.1033	Non-Significant
Pure Error	0.002271	0.000134	17			
Residual	0.003489	0.000166	21			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Variances	Bartlett Equality of Variance	5.35	12.6	0.4996	Equal Variances
	Mod Levene Equality of Variance	0.341	3.09	0.9010	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.954	0.917	0.3278	Normal Distribution
	Anderson-Darling A2 Normality	0.486	2.49	0.2297	Normal Distribution

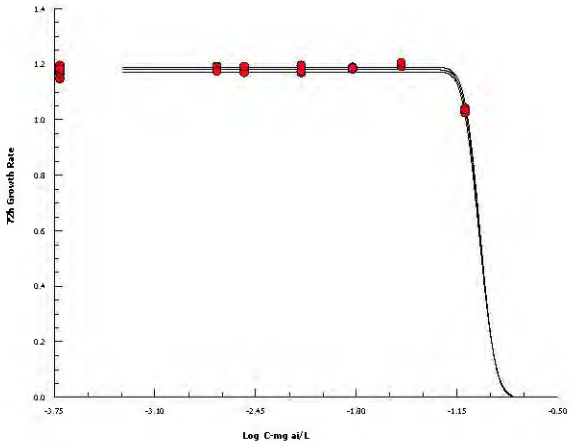
72h Growth Rate Summary

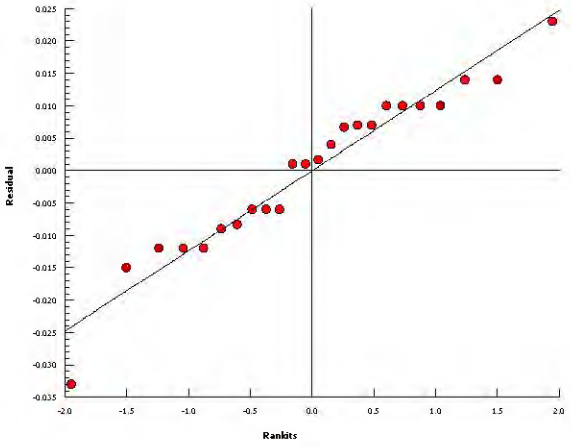
			Calculated Variate						
C-mg ai/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	6	1.17	1.15	1.2	0.00646	0.0158	1.35%	0.0%
0.002		3	1.18	1.17	1.19	0.00491	0.00851	0.72%	-1.08%
0.003		3	1.18	1.17	1.19	0.00657	0.0114	0.97%	-0.54%
0.007		3	1.18	1.17	1.2	0.00786	0.0136	1.15%	-0.65%
0.015		3	1.18	1.18	1.19	0.00173	0.003	0.25%	-1.11%
0.031		3	1.2	1.19	1.2	0.00433	0.00751	0.63%	-1.99%
0.08		3	1.03	1.02	1.04	0.00441	0.00764	0.74%	11.8%

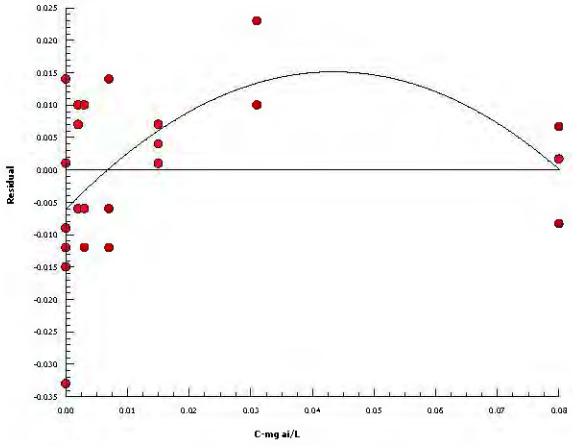
OCSPP 850.4500 Algal Toxicity **Bayer AG**

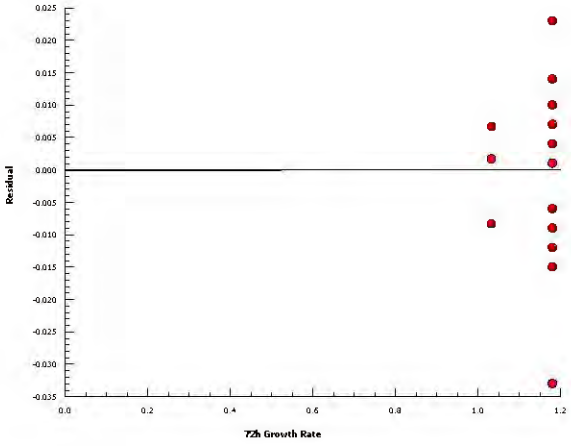
Analysis ID:	07-8318-4490	**Endpoint:**	72h Growth Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Apr-17 10:20	**Analysis:**	Nonlinear Regression	**Official Results:**	Yes

Graphics 3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]









OCSPP 850.4500 Algal Toxicity **Bayer AG**

Batch ID:	10-7105-5740	**Test Type:**	Algal Cell Growth (96-h)	**Analyst:**	
Start Date:	05 Jun-01	**Protocol:**	OCSPP 850.4500 Aquatic Plant (Algae)	**Diluent:**	Bringmann Kuhn
Ending Date:		**Species:**	Scenedesmus subspicatus (Green Alga)	**Brine:**	
Duration:	NA	**Source:**	Institute Plant Physiology	**Age:**	
Sample ID:	07-9254-1216	**Code:**	129140 50119711	**Client:**	CDM Smith - D. Worcester
Sample Date:	05 Jun-01	**Material:**	Transfluthrin	**Project:**	
Receive Date:		**Source:**	Bayer AG		
Sample Age:	NA	**Station:**			

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
19-7144-7103	72h AUC	0.031	0.08	0.0498	5.67%		Dunnett Multiple Comparison Test
12-1275-1602	72h Cell Density	0.031	0.08	0.0498	6.39%		Dunnett Multiple Comparison Test
14-4516-7464	72h Growth Rate	0.031	0.08	0.0498	1.78%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg ai/L	95% LCL	95% UCL	TU	Method
19-5014-6263	72h Cell Density	IC5	0.0693	0.0652	0.0715		Nonlinear Regression
		IC20	0.0757	0.0738	0.0773		
		IC50	0.083	0.0825	0.0835		

72h AUC Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	6	989	951	1030	936	1040	14.8	36.4	3.68%	0.0%
0.002		3	995	974	1020	988	1000	4.79	8.29	0.83%	-0.54%
0.003		3	979	912	1050	956	1010	15.4	26.7	2.73%	1.07%
0.007		3	1000	907	1100	972	1040	21.8	37.8	3.78%	-1.21%
0.015		3	1000	904	1100	956	1030	22.3	38.5	3.85%	-1.08%
0.031		3	1030	952	1120	1010	1070	19.3	33.4	3.22%	-4.59%
0.08		3	649	629	670	640	656	4.79	8.3	1.28%	34.4%

72h Cell Density Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	6	32.7	31	34.3	30.3	35	0.645	1.58	4.83%	0.0%
0.002		3	34	31.8	36.2	33	34.7	0.51	0.883	2.6%	-4.08%
0.003		3	33.3	30.3	36.3	32.3	34.7	0.696	1.21	3.62%	-2.04%
0.007		3	33.4	30	36.9	32.3	35	0.802	1.39	4.15%	-2.38%
0.015		3	34	33.2	34.8	33.7	34.3	0.191	0.33	0.97%	-4.08%
0.031		3	35.1	33.2	37	34.7	36	0.443	0.768	2.19%	-7.49%
0.08		3	21.2	20	22.5	20.7	21.7	0.294	0.508	2.4%	35.0%

72h Growth Rate Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	6	1.17	1.16	1.19	1.15	1.2	0.00645	0.0158	1.35%	0.0%
0.002		3	1.18	1.16	1.21	1.18	1.19	0.00491	0.0085	0.72%	-1.08%
0.003		3	1.18	1.15	1.21	1.17	1.19	0.00657	0.0114	0.97%	-0.54%
0.007		3	1.18	1.15	1.21	1.17	1.2	0.00786	0.0136	1.15%	-0.65%
0.015		3	1.19	1.18	1.19	1.18	1.19	0.00173	0.003	0.25%	-1.11%
0.031		3	1.2	1.18	1.21	1.19	1.2	0.00433	0.00751	0.63%	-1.99%
0.08		3	1.03	1.01	1.05	1.02	1.04	0.00441	0.00764	0.74%	11.8%

OCSPP 850.4500 Algal Toxicity **Bayer AG**

72h AUC Detail

C-mg ai/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	Negative Control	980	1010	936	976	1040	988
0.002		992	988	1000			
0.003		956	972	1010			
0.007		988	972	1040			
0.015		956	1030	1020			
0.031		1010	1020	1070			
0.08		640	652	656			

72h Cell Density Detail

C-mg ai/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	Negative Control	30.3	32.3	32	32.7	35	33.7
0.002		34.7	34.3	33			
0.003		33	32.3	34.7			
0.007		32.3	33	35			
0.015		33.7	34.3	34			
0.031		34.7	34.7	36			
0.08		20.7	21.7	21.3			

72h Growth Rate Detail

C-mg ai/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	Negative Control	1.15	1.17	1.17	1.17	1.2	1.18
0.002		1.19	1.19	1.18			
0.003		1.18	1.17	1.19			
0.007		1.17	1.18	1.2			
0.015		1.18	1.19	1.19			
0.031		1.19	1.19	1.2			
0.08		1.02	1.04	1.03			